European Topic Centre on Inland Waters

Inland Waters

Annual Topic Update 1997

By T. J. Lack and L. Laffon

February 1998

This report was prepared under the supervision of
N. Thyssen, Project Manager, European Environment Agency

Cover design: Folkmann Design & Promotion

NOTE

A great deal of information on the European Union is available on the Internet. It can be accessed through the Europa server (http://europa.eu.int)

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 1998

ISBN 92-9167-101-0

Printed on recycled and chlorine-free bleached paper

European Environment Agency
Kongens Nytorv 6
DK - 1050 Copenhagen K
Denmark
Tel: +45 33 36 71 00
Fax: +45 33 36 71 99
E-mail: eea@eea.eu.int
Homepage: http://www.eea.eu.int

CONTENTS

1. BACKGROUND AND MANAGEMENT

The European Environment Agency (EEA)

The European Environment Agency, based in Copenhagen, was established in 1990 by a Council Regulation of the European Union. The Regulation laid down a number of tasks for the Agency and prime among these is the establishment and co-ordination of a network for collecting, processing and analysis of environmental data. The network is EIONET (European Environmental Information and Observation Network) and the Agency has the responsibility to co-ordinate and develop it. The mission of the Agency is: **"through the provision of timely, targeted, relevant and reliable information to policy making agents and the public, the EEA aims to help achieve significant and measurable improvement in Europe's environment."** European Topic Centres have been appointed directly by EEA to act as centres of expertise and to execute particular tasks identified in its Multi-Annual Work Programme.

The European Topic Centre on Inland Waters (ETC/IW)

ETC/IW was appointed in December 1994 by EEA to act as a centre of expertise for use by the Agency in support of its mission and, specifically, to undertake part of EEA's Multi-Annual Work Programme.

ETC/IW consortium

The Water Research Centre (WRc) has been appointed the lead organisation of the European Topic Centre on Inland Waters under contract to EEA. The ETC/IW consists of a consortium of several European organisations which each has a representative on the ETC's Management Committee. This agrees the allocation of tasks and budget and partners are accountable to the ETC Project Leader for the satisfactory execution of the Work Programme.
The Management Committee is chaired by the ETC Leader, Dr Tim Lack of WRc. WRc also provides the services of a Technical Co-ordinator (Steve Nixon). The organisations represented on the Management Committee and their named representatives are:

- Austrian Working Group on Water (AWW - Austria) Wilhelm Vogel;
- Centro de Estudios y Experimentación de Obras Públicas (CEDEX - Spain) Teodoro Estrela;
- Flemish Environment Agency (VMM - Belgium, Flanders) Jan Voet;
- Instituto da Agua (INAG - Portugal) Manuel Lacerda;
- International Office for Water (IOW - France) Dominique Preux;
- National Environmental Research Institute (NERI - Denmark) Torben Moth Iversen;
- Norwegian Institute for Water Research (NIVA - Norway) Merete Johannessen.

There are two supporting organisations, which also contribute to the ETC's work programme:

- Danish and Greenland Geological Survey (GEUS - Denmark) Peter Gravesen;
- Institute of Hydrology (IH - UK) Alan Gustard.

ETC/IW Core Team

An international team of specialists co-ordinating the Topic Centre's work programme and acting as the interface between the Agency and the Topic Centre is based at WRc Medmenham including Dr Tim Lack and Steve Nixon and delegates from IOW: Lucile Laffon, and CEDEX: Concha Lallana. In 1997, Klaus Vogt from the North-Rhine Westphalia State Environment Agency (Germany) and Claudia Koreimann from AWW joined the Core Team for a 6 months period. Mrs Laffon currently has the position of Deputy ETC Leader, which is alternated between CEDEX and IOW.
The production of the work programme is the responsibility of WRc as the lead organisation for the Topic Centre. This is carried out in discussions between the ETC/IW Management Committee, the Core Team and the EEA Project Manager.

PHARE Topic Link on Inland Waters (PTL/IW)

The extension of the EIONET to central and eastern European countries is being made possible through the funding of the European Community's PHARE Programme. For Inland Waters, a PHARE Topic Link (PTL) was appointed in 1997 to extend the inland waters work programme to the 13 PHARE countries. This consists of a PTL leader, Janos Feher (Vituki Consult Rt., Hungary) with three other organisations: the Institute of Meteorology and Water Management (Poland), the Water Management Institute (Slovenia) and the Water Research Institute (Czech Republic).

Further information on the ETC/IW in particular and on the EEA and other Topic Centres is provided on the following home pages on the world wide web:

ETC/IW : http://www.wrcplc.co.uk/ ***EEA***: http://www.eea.eu.int

List of the principal contact points (National Focal Points and national Reference Centres) of the ETC/IW

Country	Name	Institutions	Tel/Fax/e-mail
Austria	Dr Johannes Mayer	Federal Environment Agency	43 1 31304 3240 / 43 1 31304 5400 mayer@uba.ubavie.gv.at
Belgium	Jan Voet, Ann Teller, Alain Derouane	Interregional Cell for the Environment	32 2 649 8191 / 32 2 644 2391 celinair@grafair.ihe.be
Denmark	Torben Moth Iversen	NERI	45 89 201400 / 45 89 201414 fvap@dmu.dk
Finland	Tapani Säynätkari	Finnish Environment Agency	358 9 4030 0238 / 358 9 4030 0291 tapani.saynatkari@vyh.fi
France	Jean-Louis Weber	IFEN	33 23879 7878 / 33 23879 7870 jlweber45@aol.com
Germany	Karl Tietmann	UBA	49 30 8903 2711 / 49 30 8903 2920 barbara.clark@uba.de
Greece	Marta Aravantinou	Ministry for the Environment	30 1 864 3737 / 30 1 864 3737 eeagr@atlas.voa.gr
Iceland	Hugi Ólafsson	Ministry for the Environment	354 1 609 600 / 354 1 624 566 hugi.olafsson@umh.stjr.is
Ireland	Larry Stapleton	EPA	353 53 47120 / 353 53 47119 l.stapleton@epa.ic / nfp@epa.ic
Italy	Angela Spagnoletti	SINA - Ministero dell'ambiente	39 6 7036 2320 / 39 6 7725 7008
Liechtenst.	Petra Bockmühl	National Office for Forests, Nature and Landscape	41 75 236 6400 / 42 75 236 6414
Luxemb.	Jean-Paul Feltgen	Ministère de l'Environnement	352 478 6813 / 352 400 410 jean-paul.feltgen@life.lu
Netherlands	Adriaan Minderhoud	RIVM	31 30 274 2035 / 31 30 274 4405 Ad.Minderhoud@rivm.nl
Norway	Berit Kvæven	Norwegian Pollution Control Authority	47 2 257 3400 / 47 2 267 6706 berit.kvaven@sftospost.md.dep.telemax.no
Portugal	Maria Leonor Gomes	Direcao Geral do Ambiente (SINAIA)	351 1 472 8200 / 351 1 471 9074 leonor.gomes@dga.min-amb.pt
Spain	Juan Martinez Sánchez	Ministerio de Medio Ambiente	34 1 597 63 54 / 34 1 597 59 36
Sweden	Ebbe Kvist	Swedish EPA	46 8 698 1000 / 46 8 698 1585 ebb@environ.se
United Kingdom	Paul Swallow	Department of the Environment	44 171 276 8947 / 44 171 276 8748 Paul.swallow@nfp-gb.eionet.eu.int

Country	Name	Institutions	Tel/Fax/e-mail
Albania	Maksim Deliana	Ministry of Health and Environment	355.42.30 682 /355.42.65 229/646 32 cep@cep.tirana.al
Bosnia - Herzegov.	Ahdin Orahovac	Federal Ministry for Physical Planning and Environment	387.71.473 124/ 387.71.663 548
Bulgaria	Iordanka Stoyanova	Ministry of Environment and Water	359.2.987 8342 / 359.2.980 3317
Czech Republic	Mr.Vaclav Krejci PHARE- PMU	Ministry of Environment	420.2.67 122 355 / 420.2. 739 411 vkrejci@env.cz
Estonia	Leo Saare	Estonian Environment Information Centre	372.6.564 151 / 372.6.564 071 saare@ic.envir.ee
F.Y.R.O.M.	Strahinja Trpevski	Ministry of Urban Planning, Construction and Environment	389.91. 117 288 (ext. 332) / 389.91.117 163 trpevski@unet.com.mk
Hungary	Pal Bozo	Ministry of Environment and Regional Policy	36.1.457 3369 / 36.1.201 4361 pal.bozo@ktm.x400gw.itb.hu
Latvia	Ilze Kirstuka	Latvian Environmental Data Centre	371.2.762 282 / 371.2.764 439 Ilze.Kirstuka@vdc.jurmala.lv
Lithuania	Liutauras Stoskus	Ministry of Environmental Protection	370.2.722 554 / 370.2.723 202 Liutauras.Stoskus@nt.gamta.lt
Poland	Zbigniew Kamienski	State Inspectorate for Environmental Protection	48. 22.254 859 / 48. 22.254 129 gios@warman.com.pl
Romania	Serena Adler	Ministry of Water, Forests and Environmental Protection	40.1. 312 2599 / 40.1. 312 5507
Slovak Republic	Jan Jezny	Ministry of the Environment	421.7.516 2516 / 421.7.516 2031 / 2511 moePHARE @internet.sk
Slovenia	Anita Velkavrh	Ministry of the Environment and Physical Planning	386.61.178 4534 / 386.61.178 4051 anita.velkavrh@mopuvn.sigov.mail.si

2. WORK PROGRAMME

This section describes the objectives of the technical tasks undertaken during the year 1997. The work programme also includes the three following general tasks, led by WRc, which are not described in this report: ETC Management and Co-ordination, Maintenance and Development of the Inland Waters aspects of EIONET and, Ad-hoc technical support to the EEA.

Task title and objective
Sustainable water use in Europe: 1. Sectoral use of water (lead CEDEX) **Objective:** To review water use in various sectors across Europe and with a view to making recommendations for investigating and improving the efficiency of use.
EUROWATERNET implementation (lead WRc) **Objective:** To implement progressively the inland waters monitoring network across the EEA area.
Support to DGXI on the development of the technical annexes of the proposed Water Resources Framework Directive (lead WRc) **Objective:** To provide technical assistance and expertise to DGXI in the development of appropriate Technical Annexes of the European Commission's proposal for a Council Directive establishing a Framework for European Community Water Policy.
Common tools for emissions and waste integrated inventories (lead NERI) **Objective:** To develop the conceptual model for integrated inventories further.
Availability and quality of drinking water across Europe - Implications for human health (lead WRc) **Objective:** To prepare in association with the World Health Organisation a monograph on the availability and quality of drinking water across Europe, and assess the implications for human health.
Development of electronic templates to cover the Reporting Directive and Exchange of Information Decision (lead WRc) **Objective:** To convert the questionnaires of the water sector outlined in directive 95/337/EEC to an electronic format, with the aim of harmonising the reporting of information required under the terms of Directives and to make data collection and subsequent interpretation and analysis more efficient.
Report on large lakes and reservoirs and development of a database (lead IOW) **Objective:** Under Projects MW4 and MW5 to produce a report and database on large reservoirs based on the existing ICOLD data.
Monograph on groundwater quality and quantity (lead AWW) **Objectives:** To provide support to the further development of the EC groundwater Action Programme. To provide information in support of the EU SOER and Dobris+3 reports. To provide support to the EEA/WHO on water quality and health issues.
Monograph on the impacts of excessive nutrients on the environment (lead IOW) **Objectives:** To prepare a monograph on the geographical distribution and severity of adverse biological effects in rivers, lakes, reservoirs, estuarine, coastal and marine waters, and other wetland and terrestrial habitats caused by excessive anthropogenic inputs of nutrients

3. PROGRESS DURING 1997

3.1 Sustainable water use in Europe: 1. Sectoral use

The aim of this project was to review water use in various sectors across Europe, giving a description of the present situation and gaps in existing information thereby making recommendations for future investigation and study. It aims also to analyse the conditions, which are favourable to improve the efficiency of use in different sectors and to encourage sustainable use and conservation of resources. The uses of water considered are those relating to urban supply, industry and agriculture. The study largely covers Western Europe though some information has also been obtained from some eastern European countries.

Sources and uses of water

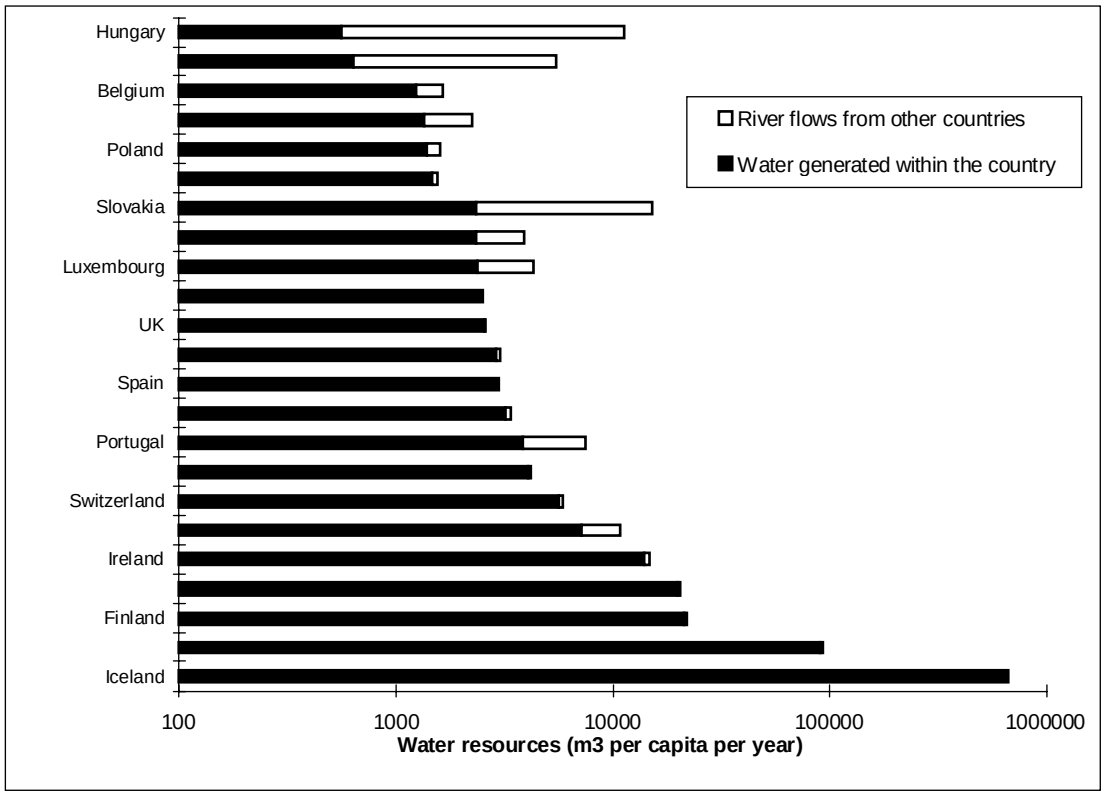
The principal source of abstracted freshwater in the EU Member States is surface water (70 to 88% of the total water abstracted for all uses) with a large part of the remainder from groundwater (12 to 18%) and only minor contributions from desalination of seawater and from re-use of treated effluents.

Freshwater abstractions in Europe have increased by less than 10% on average, between 1980 and 1995 and in some European countries the general upward trend is being reversed. In eastern Europe there has been a decline in the amount of water used and in southern European countries the growth of total water abstraction has been slowing down over recent years.

Water availability

Freshwater resources across Europe varies greatly with annual runoff ranging from over 3000 mm in parts of Norway to less than 25 mm per year in the Spanish interior and parts of eastern Europe. Transboundary flows make a significant contribution to the resources of many countries. In Hungary, for instance, freshwater originating from neighbouring countries accounts for as much as 95% of the total resource. In the Netherlands and Slovak Republic this figure is over 80%, while Germany, Greece, Luxembourg and Portugal all rely on imported water for over 40% of their resources (Figure 1).

Figure 1: Water availability in Europe (source: EEA 1998 - Dobris+3)

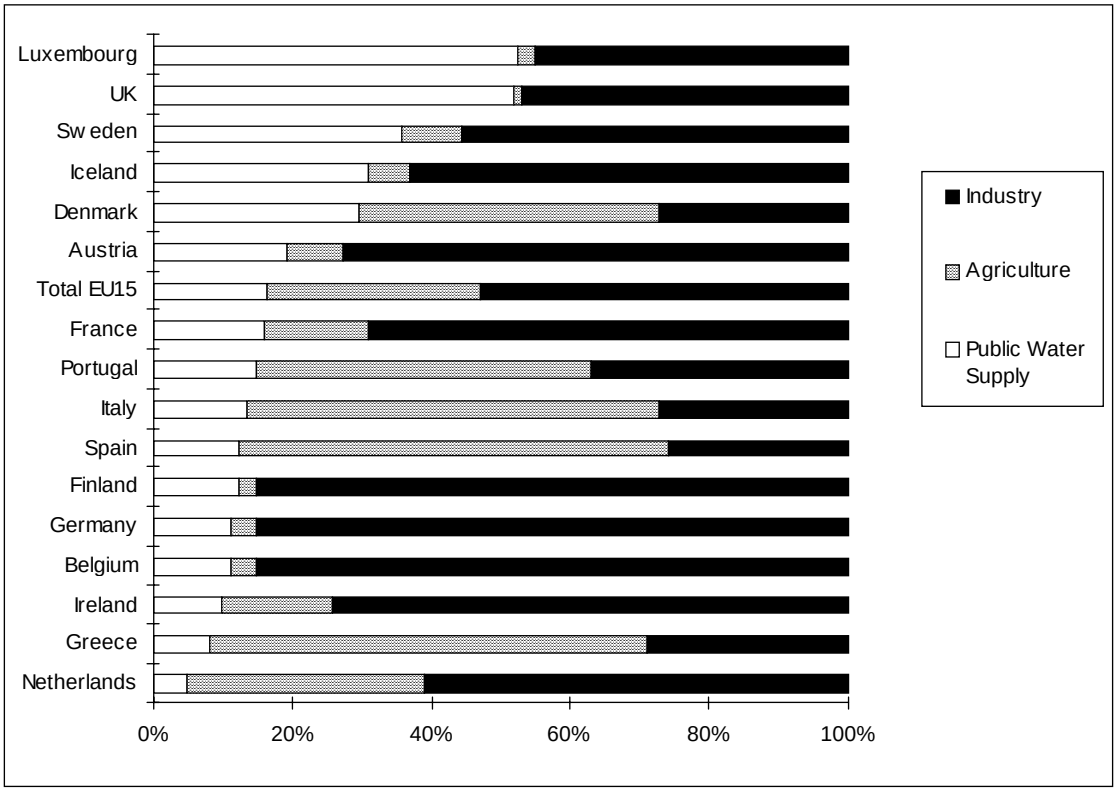


Potentially, all countries have sufficient resources to meet national demand. However there may be problems at regional or local scale. The greatest demand for water is normally concentrated in the densely populated urban areas. The demand for European water resources has increased from 100 km^3 per year in 1950 to 551 km^3 per year in 1990, with forecasts that this will increase to 661 km^3 per year by the end of this century.

Water demand

A rather variable picture appears when analysing the sectoral uses of water as reported by different sources. These differences can be attributed to different definitions of the concepts analysed. Taking as a basis the figures given by the OECD, the uses of abstracted freshwater in Europe is divided into public water supply (34%), agriculture (21%), industry (22%, cooling water excluded) and cooling water for power generation (24%) (Figure 2).

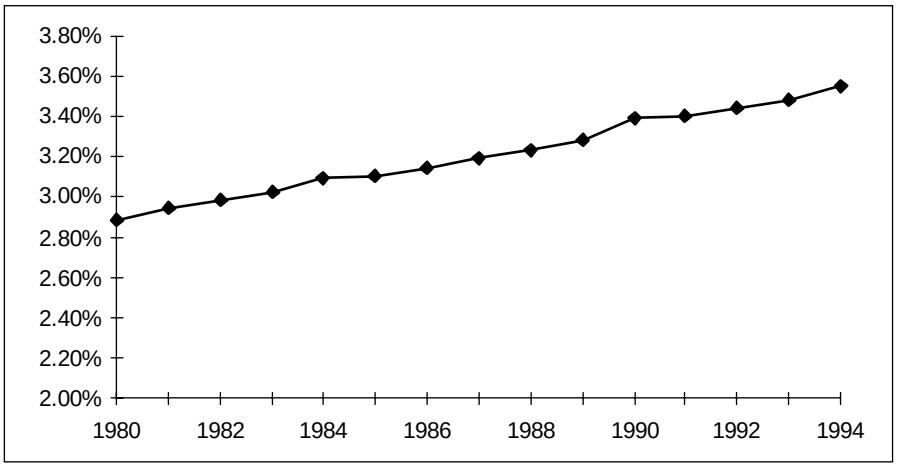
Figure 2: Sectoral use of water in Europe (source: EEA 1995)



Agriculture

One of the biggest driving forces exerting pressure on water resources is agriculture and the changes in its practices. In many EU Member States there has been a relative decrease of importance of agriculture in comparison to other economic sectors. In terms of water use agriculture accounts for approximately 20% of total water abstractions and 50% consumptive water uses. However, in southern European countries (Greece, Italy, Portugal, Spain) these percentages rise to 80% of consumptive uses and 60% of total uses, respectively. Agriculture is still a very important economic sector in the EU Accession Countries. (Figure 3).

Figure 3: Irrigated area as proportion of total land area for EU15+CH (source: FAO, 1996)



Impacts and stress on water resources

Water stress is generally related to a disproportionate abstraction of water in relation to the resources available in a particular area. Urban demand for freshwater can exceed the local long-term availability of the resource, especially in southern Europe and the industrial centres of the north. In these areas such demand could not be sustained unless action is taken to artificially boost local supply (e.g. reservoir construction). Seasonal or inter-annual variation in the availability of freshwater resources will, at times, induce problems of water stress.

Over-abstraction of both surface and groundwater is having serious impacts on associated terrestrial and aquatic ecosystems. Such impacts can be exacerbated during periods of low rainfall and river flow when there may also be increased pressures on supplies to meet urban needs, such as from watering gardens, and from irrigation of water dependent crops. The surplus of demand over supply leads to restrictions of uses (e.g. hose-pipe bans) during extended periods of time in countries such as the UK.

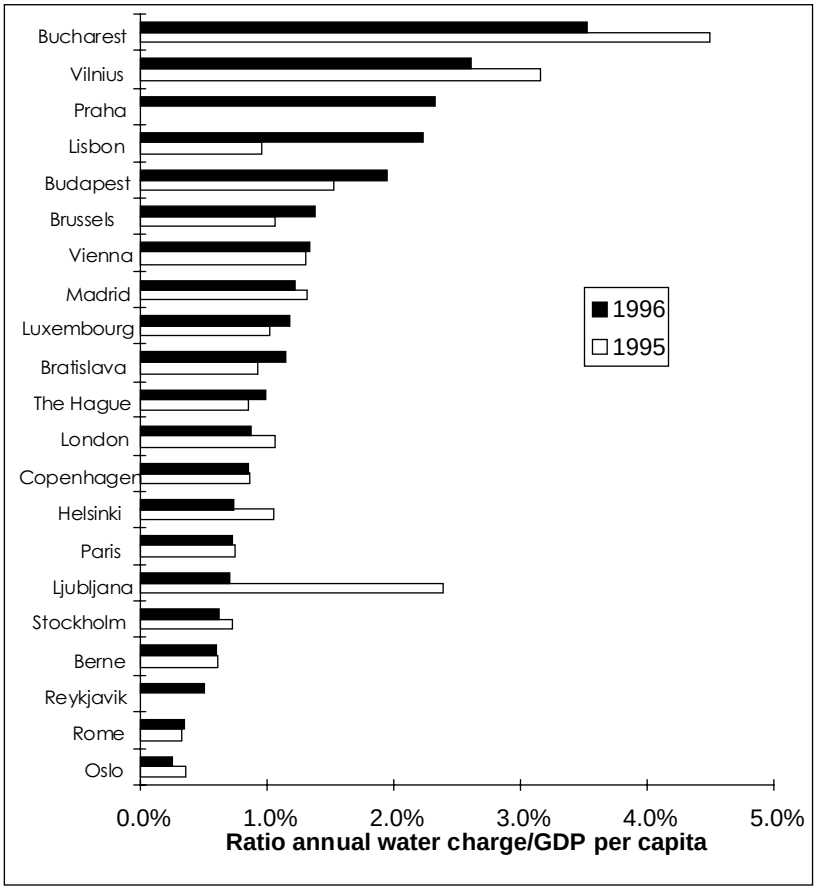
Responses - demand side management

Economic instruments, such as abstraction charges and pricing mechanisms, are widely seen as valuable tools to achieve sustainable water management. However, they are only effective in terms of their environmental goal to reduce water abstractions when the person or organisation who has to pay the charge or tax responds positively to the threat of increased charge by reducing consumption.

When applying economic instruments and in order to maintain the income of the water supplier to carry out its duty the charges will normally have to be raised as consumption goes down because of the high fixed costs. The overall benefit to consumers of saving money by saving water may therefore be small unless of course major infrastructure expenditure can be saved (e.g. the building of a new reservoir) which would otherwise have increased charges substantially.

Water prices for domestic consumers in Western Europe vary from 52 ECU/year in Rome to 287 ECU/year in Brussels. Water charges in central European cities are lower and vary from 20 and 20.5 ECU/year respectively in Bucharest and Bratislava to 59 ECU/year in Prague. Nevertheless, the annual water charge in relation to GDP per capita shows that the cost in Bucharest is the highest in Europe amounting to 3.5% of GDP per capita followed by Vilnius 2.6% and Prague 2.3%, and the lowest is 0.2% in Oslo. In Western Europe, the highest percentage is 2.2% of GDP per capita in Portugal (Figure 4).

Figure 4: Annual water charges in European cities in relation to GDP per capita (source: IWSA Congress, 1997)



Domestic metering is widespread in many countries (e.g. France, Germany, Portugal, and Spain), but less common for example in the UK and the Netherlands. Water metering is assumed to increase population awareness of water use. For example, in the UK the use of water in metered versus non-metered households is estimated to be 10% lower. The installation of water meters frequently is in line with public concerns for better use of water resources and the request for a better management of the water environment. Reliable water metering is a stringent requirement for the implementation of effective water charges.

Responses - infrastructure responses

Network efficiency has direct consequences on total water abstractions. In most countries leakage in water distribution networks is still important. Comparison of leakage in three European countries (UK, France and Germany), shows that leakage in main and customer supply pipes varies from 8.4 (in parts of the UK) to 3.7 m^3 per km of main pipe per day (West Germany), which corresponds to 243 and 112 litres/property/day, respectively. In the UK it has been estimated that stopping leakage from supply pipes would save over 1,000 million litres of water per day.

Wastewater reuse is increasing within the EU, mostly to alleviate the lack of water resources in certain regions, such as in southern European countries. The largest application of this reuse is the irrigation of crops, golf courses and sports fields where pathogens from the wastewater may be in contact with the public. There are however at present no regulations on wastewater reuse in Europe.

At present seawater desalination is being applied mainly in areas where no other sources of supply are available at competitive costs. The total volume of desalination in Europe is limited compared to other sources of supply. There are also examples of inter-basin water transfer schemes being used to alleviate short and long term water shortages in particular basins or regions.

3.2 WATERBASE and EUROWATERNET implementation

To satisfy the requirements of EEA, its member states involved in EIONET, the European Commission, Non-Governmental Organisations and the general public, it is necessary to provide access to objective, reliable and comparable information at a European level.

This will involve the construction and maintenance of a number of databases regarding the water environment which are known collectively as WATERBASE.

WATERBASE is therefore, an information system offering facilities needed to collect, validate, evaluate, store, select and visualise water environment data and statistics and (meta) information on water quality and quantity monitoring networks and stations, making these data available at different aggregated levels, for different information users and through different distribution channels. The aggregated data and information contained within WATERBASE will largely be gathered from national water databases developed in each EEA Member Country. The national monitoring sites selected to provide data to WATERBASE will be called EUROWATERNET.

EUROWATERNET (Water Resources Information and Reporting Network for Europe) is designed to "sample" existing monitoring networks to produce aggregated data of known statistical power and confidence. This need to compare like with like is achieved through a statistically stratified design with each identified and specified stratum containing similar water bodies. The use of the same criteria for selecting the strata and water types across member states ensures that valid status comparisons will be obtained at the required levels of statistical power and confidence.

EUROWATERNET, which will be developed progressively, will permit comparison of the size/numbers/types of water bodies across member states on a like with like basis (e.g. large rivers, alpine streams, large lakes) and assessment of the human pressures (e.g. population density, land use, point discharges). The stratification criteria e.g. river size, altitude, slope, land use are currently being tested. It is certain that different objectives will require different stratification criteria and the selection of different monitoring stations from those available in the national "pool". Full details of the concept, design and statistical basis of EUROWATERNET can be found in Topic Report 10, European Freshwater Monitoring Network Design (EEA 1996) and a summary is given in Topic Report 11 (EEA 1996).

EUROWATERNET will therefore draw upon the existing national and international monitoring networks which, when the selection criteria have been applied, will constitute the national WATERBASE.

Member states will benefit from improved European policy as a result of better information. In addition, countries may benefit from EUROWATERNET in a number of other ways:

- providing inputs which show their country in the best light, making full use of national data;
- providing information on international environmental issues on a comparable and consistent basis;
- informing on policy initiatives by providing comparative information on performance in other countries;

providing information to their citizens on the state of the environment in their country, neighbouring countries, European regions and the whole of Europe.

Progress to date and the way forward

It is proposed to complete many of the actions in the "next steps" column in Table 1 by the summer of 1998 to allow a report to be prepared in advance of a workshop to be organised by EEA in the autumn of 1998. The purpose of the workshop will be to inform all member states of progress to date, the benefits to be gained from implementing the EUROWATERNET and to invite all the remaining member states (including the PHARE Countries) to participate in the process. The overall objective is to have EUROWATERNET fully operational on the EIONET by the end of the second contract period of ETC/IW (December 2000).

Table 1: Eurowaternet: Progress and way forward

Country	Activity	Next steps
Austria	1. Pilot testing groundwater criteria Extended to surface water network	Full implementation and institutionalisation of WATERNET on EIONET
Belgium (with France and the Netherlands)	1. Testing criteria on two international river basins - Scheldt and Meuse 2. Testing criteria on surface water network of Flanders	Awaiting outcome of the tests
Denmark	1. Pilot testing surface water criteria (rivers and lakes) 2. Extended to groundwater networks 3. Comparison and regional aggregation with river data from England and Wales, and France Comparison and regional aggregation of lakes with Ireland, Norway and Sweden	Full implementation and institutionalisation of WATERNET on EIONET
Finland	Testing surface water criteria on lakes and rivers	Institutionalise surface water network on EIONET. Extend to groundwaters with the support of Finland and funding from Nordic Council implement in Baltic Countries and west Russia
France	1. Testing rivers criteria in two catchments (2 Water Agencies) 2. Comparison and regional aggregation with river data from Denmark, and England and Wales	Apply to all surface waters in France. Consider extension to groundwater network
Germany	3. Testing rivers criteria on data from North-Rhine Westfalia	Extend testing to other data with support of LAWA. Extend testing to lakes and groundwater
Ireland	Testing criteria on lakes and rivers network	Extend to river network
Norway	Testing criteria on lakes network	Extend to river network
Spain	1. Pilot testing of river quantity aspects of pro-posed network 2. Extending testing to river quality network	Establishment on a national basis and extend to groundwaters
Sweden	Testing criteria on lakes network	Extend to river network
United Kingdom	1. England and Wales pilot test surface waters criteria (rivers) 2. Comparison and regional aggregation with river data from Denmark and France 3. Extension of comparisons and regional aggregations to include rivers from Austria, Ireland, North-Rhine Westphalia and Spain, as appropriate.	Scotland and N Ireland pilot test surface waters (rivers) Extend to groundwater where appropriate Compare and regionally aggregate data from UK with other appropriate regions/countries of EEA area

3.3 Support to DGXI on the development of the technical annexes of the proposed Water Resources Framework Directive

In response to a request from the Council and the Environment Committee of the European Parliament for a fundamental review of Community water policy, the European Commission has proposed a Council Directive establishing a framework for Community action in the field of water policy, also called the Framework Directive (COM(97) 49 final).

The Commission has expressed its willingness to further develop, with the help of EEA and ETC/IW, the technical annexes of the Directive and particularly Annexes II, III and V, respectively dealing with "Analysis of the characteristics of the River Basin District", "Review of the environmental impact of

human activity" and "Monitoring of surface status and groundwater status".

During 1997, ETC/IW in collaboration with EEA has provided the Commission with several technical recommendations relating respectively to:

- the definition of "good" and "high" ecological status of surface waters (rivers/canals, lakes, estuaries/brackish lagoons and coastal and marine waters),
- a physical typology of surface waters (classification of European water types, ecoregions and ecotypes),
- the most appropriate indicators (chemical, biological and physical) for the assessment of ecological status of surface waters and marine and coastal waters,
- the monitoring of significant water bodies and representative monitoring of all other bodies of surface waters,
- the monitoring and assessment of quantitative groundwater status.

Also, EEA and ETC/IW attended several technical workshops involving experts from Member States, organised by DGXI and/or by the Luxembourg Presidency, to investigate the key issues stated in Annex V. There are also explicit links with the proposed EUROWATERNET and the need of the Commission for information on the status of EU's water resources.

3.4 Common tools for emissions and waste: integrated inventories

The project was undertaken jointly with the ETC on Air Emissions. The report describes the progress made so far in defining an overall framework methodology for emissions inventories to water. The difficulties inherent in water emissions assessment are considered in order to establish a simplified, robust approach which could provide for the various users a minimum set of reliable data in the short term. The assumption that a water emissions inventory could be treated as an extension of the CORINAIR system is considered and discussed.

The approach taken by ETC/IW concentrates on three main issues:

- **The substances to report**. Determinands to be selected should represent a pollution threat to the environment. Methods to be used for the selection should be based on legal requirements, environmental needs, and feasibility.
- **The spatial scale for reporting**. The river or lake basin is the relevant unit for the assessment of emissions to water. For the purposes of the EEA, it seems reasonable and appropriate to consider only the topographic surface catchments. There are potential problems in that currently much pressure data is gathered on the basis of administrative units rather than the catchment level.
- **The time scale for reporting**. The currently proposed definition for air emissions is "the mass of substance emitted per year to the atmosphere". For water issues, different temporal resolutions are needed for different purposes although annual reporting is appropriate for many legal purposes and for state of the environment reporting.

Emission inventories are required under a number of Directives aimed at controlling and reducing pollution in the water environment. Many of these directives are likely to become subsumed under the Water Resources Framework Directive but the need for Member States to monitor and collect information on the state of inland waters and the pressures arising from catchment activities will still be a fundamental legal requirement. In particular, the Integrated Pollution, Prevention and Control (IPPC) Directive requires the Commission to report every three years an inventory of the "principal emissions and sources" based on data supplied by the Member States. Thirdly, the EEA's information needs on pollution sources are governed by its obligations for regular reporting about the state of the environment and specific issues.

A proposed list of determinands to be included in the first approach to producing the emissions to water inventory is as follows: BOD, COD, Total phosphorus, Total nitrogen and amonia. Metals (Cu, Hg, Cd, Pb, Zn, As), PAHs and other "Dangerous Substances" will be added later.

In Europe, the available information on pollution sources can be divided into registers on Urban Waste Water (UWW), Industrial Waste Water (IWW) and diffuse pollution sources registers (DPSR). A review of existing sources of information has been carried out and relevance to EEA assessed.

Table 2: Number of countries registering various determinands for different types of pollution sources (source VKI study for DGXI)

Determinands	Urban Waste Water	Industrial Waste Water	Diffuse sources	Apportioned
BOD_x	16	13	3	4
COD	13	13	2	4
Total N	13	11	5	11
NH_4-N	13	11	4	8
NO_{2+3}-N	9	9	4	7
Total P	14	12	6	10
PO_4-P	10	5	4	9
Metals (one or more)	9	10	3	6
Organic micro-pollutants	4	9	2	6
Radioactive elements	1	*2*		
Bacteria	1	*0*		

A guideline methodology for the estimation of point and diffuse source emissions to water has been prepared. This has been based on existing models used in France, Denmark and the Netherlands.

The anticipated difficulties suggest that a pragmatic approach be taken and that the construction of an Emissions Inventory at the European level should be attempted on a step by step basis and should focus on a limited set of substances which can be evaluated by simple means and which would not require too much data.

The main principle is to achieve good precision for individual large sources, and a lower precision for aggregated small sources. Therefore, it needs to combine inventories and statistical assessments.

The nomenclatures and data that are needed by the computational model derived from the methodology must be carefully listed and evaluated, particularly the capacity of data providers to apply the nomenclatures to their national data sets. The main issues requiring specific attention are:

- Finalisation of a comprehensive nomenclature
- Availability of a common GIS that is capable of dealing with administrative and watershed aggregations
- Choice of a common agricultural load assessment method
- Transfer assessment methods need to be developed, and calibrated
- Reporting of emissions into water

Pilot testing, with volunteer countries (e.g. France, Denmark, the Netherlands), of the methodology and the computation model, using readily available data is recommended.

3.5 Monograph on availability and quality of drinking water across Europe - Implications for human health

The overall aim of the monograph was to build on the assessment of the current state of water resources (quality and quantity) across Europe carried out by ETC/IW, and to survey and describe the possible impacts of the sources intended for potable supply on public health and well-being. The monograph covers 44 European countries and will be aimed at policy assessors and policy makers at the national and international level. It is undertaken in association with the World Health Organization. ETC/IW is responsible for the collection, analysis and interpretation of information concerning drinking water supply and quality across Europe.

Progress

An annotated list of contents was produced in collaboration with EEA and WHO. The report will review the different types of potable supply sources across Europe, including groundwater, rivers, lakes and reservoirs, etc. and present geographical trends of quality, or fitness for purpose, across the continent. The availability of sources will also be examined (it has been reported that Europe contains 8% of the world's renewable water but accounts for about 15% of total world abstractions, indicating that resource availability is an important issue). The report will also include descriptions of public health risks of inadequate and contaminated sources and examination of the underlying causes. The monograph will take the integrated assessment approach by focusing attention on the Driving Forces which give rise to Pressures on potable sources, the resultant State of the resources, the Impacts in terms of public health and well-being (in particular relating to microbiological and chemical contamination) and the policy implications (Responses).

Information already available from national and international sources (WHO, FAO, Eurostat, OECD, etc.) concerning water resources, water and sewerage infrastructure, etc. were summarised into a matrix and sent to 44 EEA NFPs for validation and completion.

A questionnaire was produced and sent to 53 WHO contacts. It comprises two sections: (1) legal framework of drinking water quality and water quality monitoring and, (2) health effects of contaminated drinking waters (outbreaks of waterborne diseases, national incidences). To date 22 questionnaire returns have been received. Replies are currently being registered into a database and analysed. The production of the final report is planned by the end of June 1998. The monograph is to be published jointly by EEA and WHO and presented (as a major substantiation document) in support of the Ministerial Conference on Environment and Health, to be held in London in June 1999.

3.6 Report on the support to DGXI on the Standardised Reporting Directive and Exchange of Information Decision

The Standardised Reporting Directive (91/692/EEC) requires Member States to report information on the implementation of various Directives relating to the water sector. The project was undertaken for the needs of the Commission (DGXI) and includes support to:

- compile inventories of questionnaire findings;
- provide software templates and guidelines to Member States to facilitate recording and compilation of data; and
- analyse a sub-sample of returns and report on the findings.

The implementation of the following Directives was examined: the Drinking Water Directive (80/778/EEC), the Freshwater Fish Directive (78/659/EEC), the Shellfish Directive (79/923/EEC), the Surface Water (Sampling and Analysis) and Monitoring (79/869/EEC) Directives, the Directive on the Disposal of Waste from the Titanium Dioxide Industry (78/176/EEC), the Groundwater Directive (80/68/EEC) and the Dangerous Substance Directive (76/464/EEC) and its daughter Directives (excluding Mercury). The Bathing Waters Directive (76/160/EEC) was specifically excluded from this study.

Electronic templates have been developed together with a general format for data exchange, to allow the entry of data from Member States into a database. Initially, these were developed for the Freshwater Fish, Shellfish, Drinking Water and Dangerous Substances (Mercury) Directives. These have been used wherever possible to allow a detailed analysis of the returns. However, in many cases, the data submitted by Member States is incomplete. Many returns were in paper format, hand-written and difficult to understand. There were many inconsistencies which made analysis of the returns difficult or even impossible within the time-frame of the project.

3.7 Report and database on large lakes and reservoirs

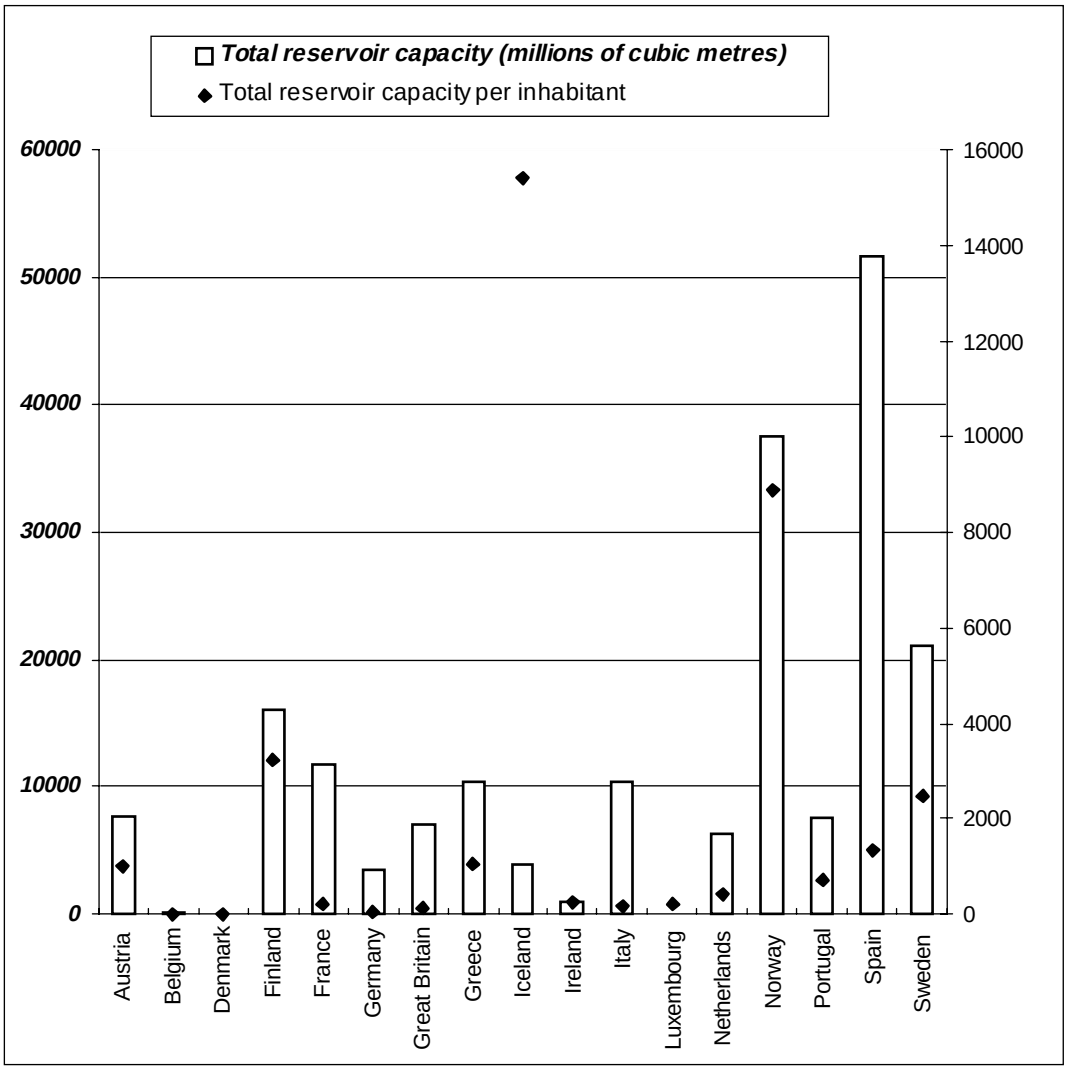
The objectives of the study were to overview the physical, chemical and ecological characteristics of lakes and reservoirs, as well as to describe their uses and evaluate their environmental state and trends. The geographical scope of the project was the 18 EEA member states. The study indicates a wide range of environmental situations for lakes and reservoirs in Europe. Two main themes

emerged: environmental problems affecting lakes and reservoirs ecosystems and uses, and impacts on the environment caused directly or indirectly by reservoir construction.

A database, known as the **E**uropean **L**akes, **D**ams and **Re**servoirs **D**atabase (ELDRED), was constructed to organise data collected from national focal points through two questionnaires. One questionnaire concerned only major reservoirs (responses received in 1995-1997) and the other questionnaire was part of the Dobris+3 collection effort in 1997, focusing on nutrient-related problems. Other information from the World Register of Dams and from OECD/Eurostat publications was also entered in the database. The ELDRED database now contains information concerning over 3 500 reservoirs and over 300 natural lakes and is available on request from ETC/IW. The density and size of natural lakes throughout Europe vary considerably. In terms of numbers the majority of natural lakes in Europe occur in Norway, Sweden and Finland with 85,000 and 56,000 lakes over 1 hectare in Sweden and Finland, respectively. It has been estimated that over 9% of the land area of Finland and Sweden are covered by freshwater lakes. Significant numbers of natural lakes also exist in Iceland, Denmark, Ireland and the UK.

Reservoirs are distributed quite differently over Europe, often with the highest densities in regions with low rainfall, particularly southern Europe. In other countries with increasing demands for water and energy, reservoirs are also numerous. Spain, France, UK and Italy have the largest number of major reservoirs (more than 400 in each case). Scandinavian countries have lower numbers of reservoirs, but these are generally of larger capacity. (Figure 5).

Figure 5: Total reservoir capacity in volume and per inhabitant (source: NFPs, ICOLD 1984/1988 and UN population statistics updated November 1997)



Eutrophication affects significant numbers of lakes and reservoirs across the whole of Europe (causing serious problems for public water supply, and also impacting the lake ecosystem). In most

cases, phosphorus is the principal cause of eutrophication. Only in sparsely populated regions such as parts of the Nordic regions, Ireland and Scotland are there a high proportion of lakes with low phosphorus concentrations.

Certain lakes have been the subject of detailed studies and efficient action programmes to reduce nutrient loads in the catchment and several are showing signs of improvement. Some of these lakes will nevertheless require several decades and strong preventive and curative measures for restoration because of nutrient accumulation in the lake and in its catchment.

Although the lack of data does not permit satisfactory conclusions, it would appear that the proportion of lakes with high phosphorus concentrations has gradually decreased over the last few decades, in all likelihood due to specific action programmes and general improvements in wastewater treatment facilities. However, the state of European lakes and reservoirs is still of concern, since the situation seems to be worsening in many lakes with previously moderate or low phosphorus levels.

The marked contrasts in reservoir use (and importance) across Europe reflect both geographical influences (water resource availability) and national energy policies (hydropower production). The numerous hydropower reservoirs often located in mountainous or nordic regions can be distinguished from the generally smaller irrigation and public water supply reservoirs situated in lowland and southern regions, which tend to have longer renewal times, are more likely to be subject to higher nutrient loads and their uses are particularly sensitive to eutrophication impacts.

Acidification is a more regional issue, and some signs of improvement due to earlier atmospheric sulphur reductions are being observed. However, nitrate leaching would appear likely to be an increasingly important factor in determining acidification.

In certain reservoirs, ***sedimentation*** can be a significant problem with important long term impacts, requiring careful catchment management and drastic curative measures.

Although historic ***drainage*** of lakes has led to the destruction of important lake habitats, in some cases it has at the same time created new wetland habitats.

Lakes and reservoirs ecosystems and uses are particularly sensitive to many types of water quality pollution because of their tendency to accumulate pollutants in water or in sediments. Occurrences of ***heavy metals and persistent organic pollutants*** have been observed in several lakes and reservoirs in the EEA area.

The human effects on rivers and their ecosystems as a result of dam/reservoir construction and operations were also considered significant. Dams constructed in periods when environmental considerations were not foremost tend to lack facilities which would permit their operation in a more 'environmentally-friendly' way. Impacts on flow regime, temperature regime and water levels are particularly apparent in the case of some hydropower dams, since they are often located in remote sensitive mountainous regions. However, impacts have also been reported for other types of reservoir - for example impacts due to poor water quality during emptying operations or the creation of migration barriers for fish.

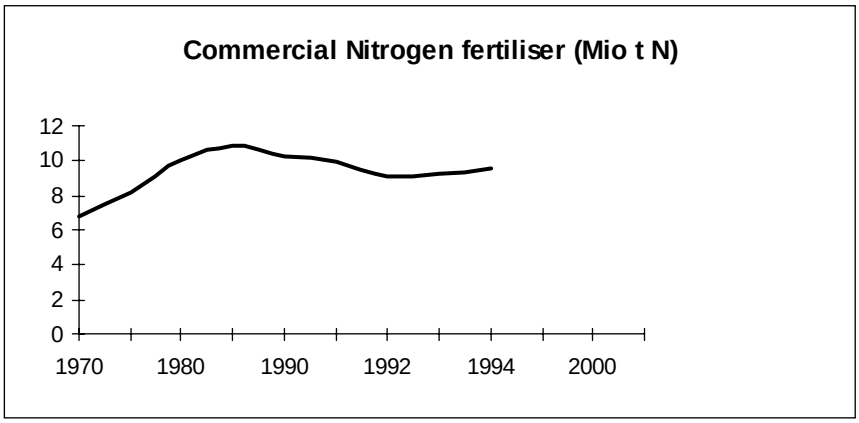
3.8 Monograph on groundwater quality and quantity

This monograph aims to provide overviews of important groundwater quality and quantity issues largely in the form of maps and other geographical applications. The information network of the EEA, EIONET, has been used to collect information on groundwater quality and quantity on a pan-European scale. Evaluations and interpretations are mainly based on the 37 responses to a questionnaire distributed to 44 countries within Europe. It is the first pan-European report based on measured groundwater quality data (previous large-scale studies relied on model predictions). Emphasis is placed on the state of Europe's groundwater with regard to nitrate and pesticides. Impacts include groundwater over-exploitation, saltwater intrusion and wetlands endangered by groundwater over-exploitation. The monograph will be published by EEA in 1998.

Pressures from Nitrogen

Nitrogen fertiliser consumption is used as an indicator of nitrate groundwater pollution. Agriculture was identified as being the over-riding driving force for widespread nitrate pollution and data on nitrogen fertilisers are available and comparable (Figure 6).

Figure 6: Development of commercial nitrogen fertiliser consumption in EU15



Nitrogen fertiliser consumption in Europe is still increasing and is expected to continue. Table 3 indicates the trends in consumption of nitrogen fertiliser in Europe from 1994/1995 and projected to 2000/2001.

Table 3: Nitrogen fertiliser consumption in 1000 tonnes (source: FAO, 1996)

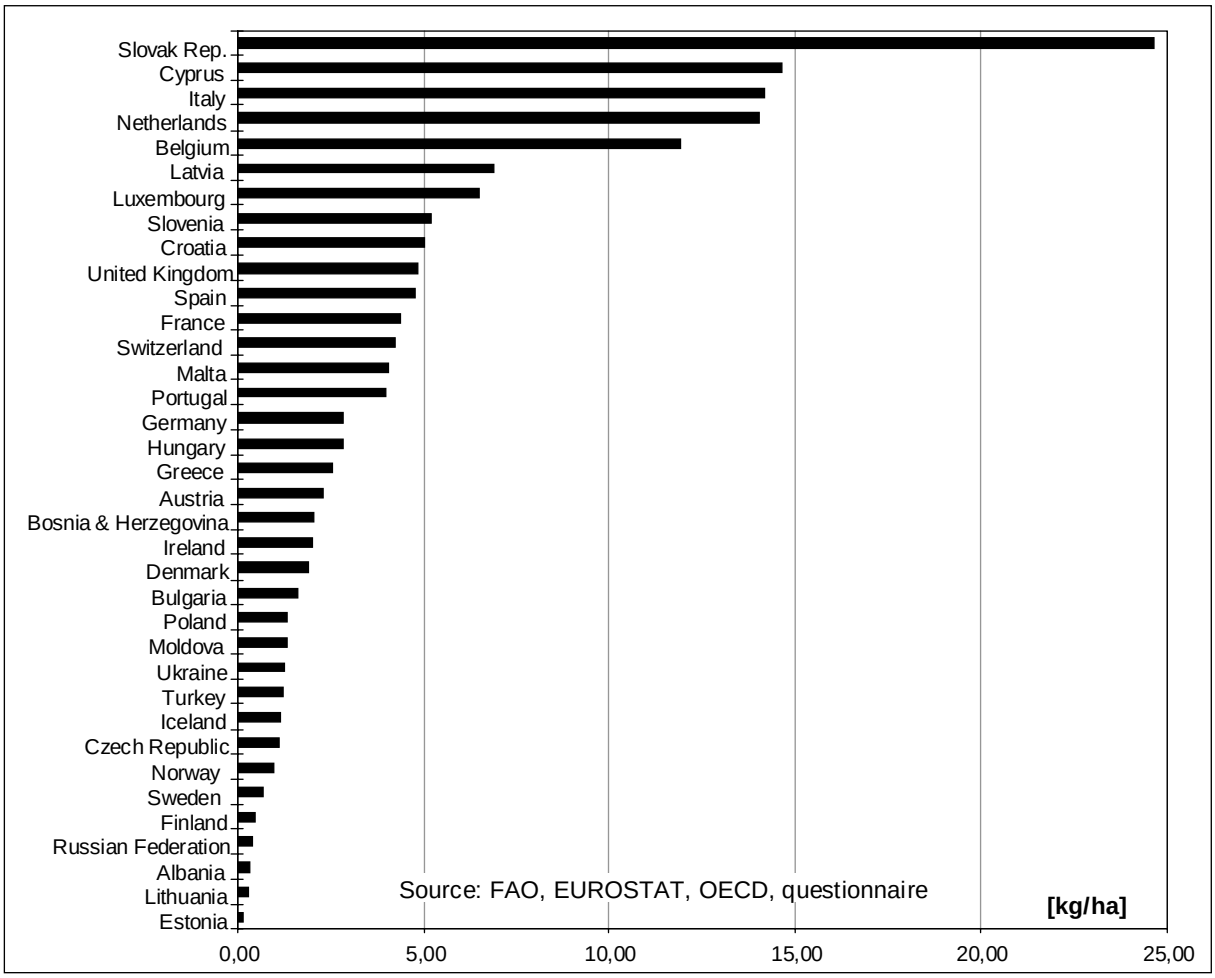
	1994/95	1995/96	1996/97	1997/98	1998/99	99/2000	2000/01
Europe	11,768	11,940	12,200	12,210	12,230	12,260	12,290
Eastern Europe	2,058	2,250	2,380	2,510	2,650	2,800	2,950
Western Europe	9,710	9,690	9,820	9,700	9,580	9,460	9,340

Pressures from Pesticides

Pesticides (crop protection products) are perceived to be a major threat to European groundwater and, therefore, to the health of humans that drink it. Around 800 active crop protection substances are registered for use in Europe although according to the manufacturers' association (ECPA personal communication) only about 10% of the active substances are used in a major way. The total quantity of crop protection products has decreased by 25% since 1991 as a result of decreased use and/or Integrated Pest Management (IPM) strategies.

An indicator of potential pressure of pesticides on the environment is pesticide consumption (kg) per hectare of arable and permanent crop land (Figure 7).

Figure 7: Pesticide consumption for arable land and permanent crop land (in kg/ha)



Pressures from over-abstraction

Water is abstracted from below the ground for the following purposes: public water supply; industrial purposes; agricultural purposes; land drainage and land sealing. Over-abstraction is one of the major causes of saltwater intrusion and endangered wetlands. An aquifer's vulnerability to such degradation is to a large extent determined by geography and climate.

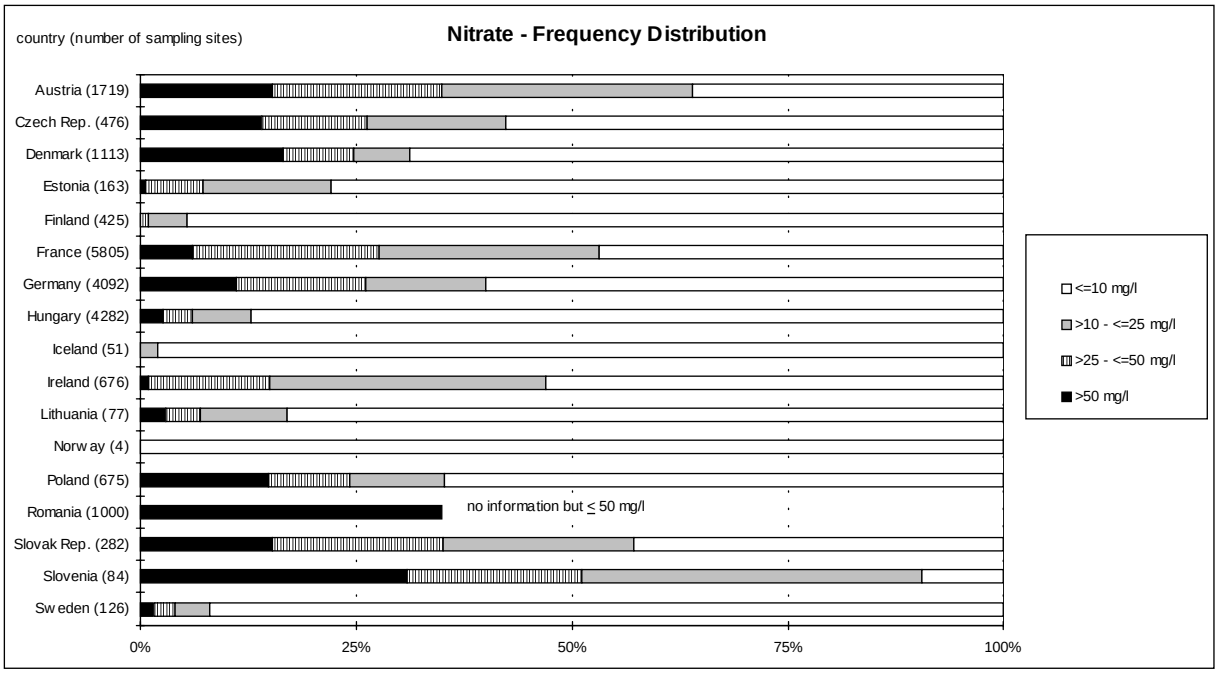
In Europe the share of groundwater needed to meet the demand for freshwater ranges from 0.2% up to 100%. In the majority of the countries total annual groundwater abstraction has been decreasing since 1990.

Status of groundwater in Europe

Nitrate

In Europe, nitrate in groundwater is still a potentially serious problem as information at the country level, the regional level, and information about hot spots show. In eight countries of the 17 providing data, the guide level of 25 mg NO3/l is exceeded at about 25% of the investigated sampling sites (Figure 8).

Figure 8: Nitrate – Groundwater quality at the country level



A few countries provided information concerning trends of nitrate in groundwater. The majority of the data provided do not indicate statistically significant trends.

Pesticides

Much of the monitoring of pesticides that has been done is purely in relation to compliance with the EC Drinking Water Directive and data is not collected in sufficient quantity to establish either the current status or time trends. Many different pesticide substances have been detected in European groundwater exceeding the maximum acceptable concentration of 0.1 µg/l. Serious problems (i.e. exceedances of standards) with regard to certain pesticide substances have been reported from Austria, Cyprus, Denmark, France, Moldova, Norway, Romania and the Slovak Republic. The most commonly found pesticides in groundwater appear to be atrazine, simazine and lindane.

Groundwater over-exploitation

For this survey the criterion for groundwater over-exploitation was defined as "groundwater abstraction exceeding the recharge rate and leading to a lowering of the groundwater table". Eleven countries indicated over-exploited groundwater areas. In ten countries groundwater over-exploitation does not occur.

Groundwater over-exploitation seems to be a major problem in the eastern European countries. Five out of seven PHARE countries but only three countries from eight EU-15 and EFTA countries reported groundwater over-exploitation. From the 126 named groundwater, 53 cases of saltwater intrusion are reported. The majority of the groundwater areas have been over-exploited since the eighties. Eight out of 32 European countries with coastlines named 95 areas of salt water intrusion by sea water.

Wetlands endangered due to groundwater over-exploitation

Over-abstraction of groundwater is one of several threats causing the disappearance of whole lengths of rivers and the drying out of wetlands. Of about 420 named wetlands (16 countries), 11 wetlands are endangered by groundwater over-exploitation. These were from Denmark (6), Hungary (4) and UK (1). However, the information obtained is very incomplete, difficult to compare, and probably does not reflect the actual degree of threat.

Current monitoring policy

Different strategies are applied in different countries, and as a consequence, different aspects are investigated and even data concerning the same environmental aspect are often not comparable. Data aggregated at the country level do not fully reflect the actual endangering situation of groundwater quality and quantity within a country. Few time-series for assessing temporal

comparisons are available. Harmonised statistical guidelines for calculating trends should be developed in order to guarantee comparability.

The strategy of water management within catchment areas and the development of action plans for catchments and groundwater within the draft Water Resources Framework Directive (COM (97) 49 final) should provide the opportunity for reversing the errors of the past and improving groundwater protection in the future.

3.9 Monograph on the impacts of excessive nutrients on the environment

This Monograph aims to provide an overview of the geographical distribution and severity of adverse biological effects of excessive anthropogenic inputs of nutrients into rivers, lakes and reservoirs, estuarine and coastal waters, as well as into sensitive terrestrial ecosystems. Only those nutrients that are important in terms of nutritive value and nuisance levels are assessed. They are in practice phosphorus and nitrogen compounds. The monograph will be published by EEA in 1998.

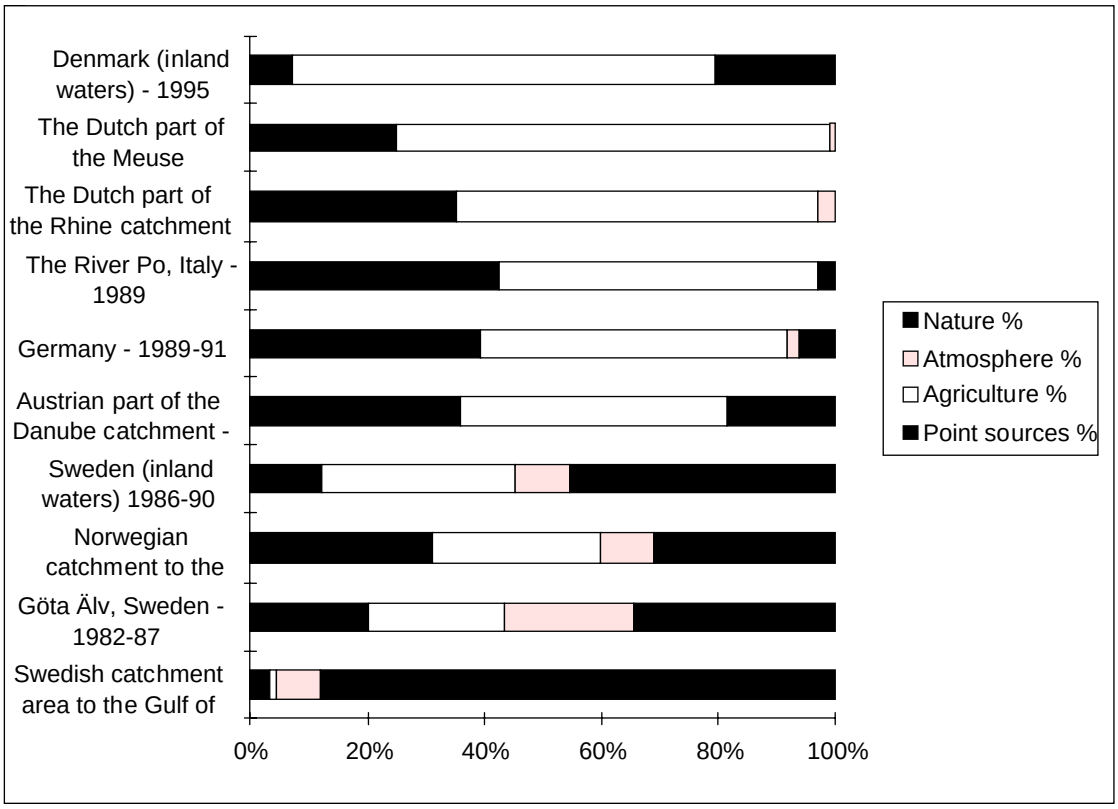
Sources of nutrients

Most of the phosphorus loading of inland surface waters is attributable to discharges from point sources, especially municipal sewage and industrial effluent. The emissions of phosphorus are decreasing in many parts of Europe. Results from large river catchments or national emission inventories show that there has been a reduction of typically 30 to 60% since the mid-1980s. Improved waste water treatment and the substitution of phosphorus in detergents has resulted in a decrease of phosphorus concentrations in some European surface waters over the last 10 to 20 years. Nevertheless, the anthropogenic contribution to phosphorus loading is generally far beyond the natural load in most parts of Europe.

In contrast to phosphorus, nitrogen loading is primarily from agricultural activity, especially the use of nitrogen fertilisers and manure. The nitrate level in most European rivers has increased during the last 10 to 20 years, mainly as a result of increasing or high use of nitrogen fertilisers, and intensification of crop production of thin and fragile soils. Changes in arable farming practices have also increased the rate of soil erosion, with a related increase in phosphorus run-off. In many areas, much of the agricultural land is drained and large numbers of Europe's marshes, wetlands, ponds and lakes have disappeared. This has considerably reduced the capacity of freshwater ecosystems to store and eliminate many pollutants, including nutrients. In those river systems draining catchments in the central and western part of Europe, 46 to 87% of the nitrogen load to inland waters is related to agriculture. In some catchments point sources of nitrogen (predominantly municipal sewage treatment plant) also play an important role, accounting for 35 to 43% of the total discharge.

The impacts of excessive nutrients are either manifested as a direct effect (for example, the nutrient acting as a toxin) or through an eutrophication effect (where the nutrient acts directly on the trophic structure) (Figure 9).

Figure 9: **Source apportionment of nitrogen load (Source: Windolf, 1995; Swedish EPA, 1994; Umweltbundesamt, 1994; BMLF, 1996; Ibrekk et al., 1991; Italian Ministry of the Environment, 1992; RIVM, 1992; Lofgren & Olsson, 1990; compiled by ETC/IW)**



Lakes and reservoirs

Impacts arising from excessive nutrients in still freshwaters is usually caused by phosphorus. In unaffected lakes and reservoirs the concentration of phosphorus is generally below 25 µg/l. A large proportion of the lakes in most parts of Europe have phosphorus concentrations exceeding this limit, thus indicating a significant anthropogenic influence. Only in sparsely populated regions such as parts of the Nordic countries, Ireland, parts of the UK and central European mountain regions is there a high proportion of lakes with lower phosphorus concentrations. Primarily because of improved urban waste water treatment, there have been some quality improvements in some lakes since the 1970s. In particular the proportion of heavily polluted lakes and reservoirs has decreased. In some of the latter cases observed concentrations were three or more orders of magnitude above 'reference' (unimpacted) values. At the same time, the proportion of pristine or near pristine lakes has tended to shrink. The state of European lakes and reservoirs is, thus, still heavily affected by anthropogenic nutrient pollution and the condition of many lakes is far from satisfactory.

Rivers

Nitrate, ammonium and its toxic form, ammonia, are present in excessive concentrations in almost all river monitoring sites for which information was received. Available data suggest that this situation is slowly improving, although this is mainly at the worst quality sites, whilst in contrast the number of good quality sites has tended to decrease (Table 4).

Phosphorus is present in excess at practically all monitoring sites for which information was provided. In terms of eutrophication, this excess generates unwanted plant growth at a large proportion of sites. It is very likely that sites where no excessive quantity of biomass can be detected (directly or indirectly) are not sensitive to eutrophication because of other controlling factors (e.g. turbidity or river velocity). The imbalance in main nutrients is exaggerated by human inputs; the most polluted sites have N/P ratios favourable to cyanobacteria growth, which is observed in great quantities during drought periods.

Table 4: Descriptive statistics for averages of annual mean and maximum nitrate nitrogen concentrations in European rivers 1975-1980 and 1992-1996. Data from 30 countries.

	Number of stations	Percentage of river stations with concentrations not exceeding (mg $N\text{-}NO_3$ l^{-1})					
$N\text{-}NO_3$(mg l^{-1})		10%	25%	50%	75%	90%	99%
1975-1980 (average of annual means)	**697**	0.193	0.70	1.54	3.19	6.05	11.8
1992-1996 (average of annual means)	**1525**	0.193	0.72	1.73	3.53	5.89	9.78
1975-1980 (average of annual maxima)	**685**	0.392	1.23	3.12	5.66	11.40	24.4
1992-1996 (average of annual maxima)	**1352**	0.341	1.31	2.74	5.37	9.36	18.5

Marine and coastal waters

Between 1990 and 1995 the load of total nitrogen from rivers and direct discharges to seas in the western and northern part of Europe appears to have increased only for the North Sea, while there appears to have been no changes in the other seas. No changes in the atmospheric deposition of nitrogen were measured in the North, Mediterranean and Black Seas. The North East Atlantic Ocean shows variable levels of load, while the Baltic Sea appears to have received less nutrients than in 1990. There are no data available for the other seas (Barents, Caspian, Norwegian and White).

Trends in total phosphorus loads over the same period appears to be somewhat different from nitrogen loads. The North Sea data show an increase in phosphorus load, the Iberian Coast gives a variable picture, loads to the Celtic Sea have been steady since 1991, while the three northern-most seas show no changes.

Marine eutrophication is a widespread and transboundary phenomenon in all European Seas with eutrophication related phenomena being observed over increasing areas and with (perhaps) increasing frequency. It affects marine biodiversity and fish stocks as well as human health and recreational uses of marine coastal zones.

Terrestrial ecosystems

The most important pathways from anthropogenic sources to the natural and semi-natural terrestrial environment is through atmospheric deposition, lateral groundwater flow or surface runoff from agricultural fields. The terrestrial environments susceptible to increased availability of nutrients are, however, mainly influenced by atmospheric deposition.

The species most sensitive to excessive nitrogen deposition are those belonging to terrestrial ecosystems which mainly or only depend upon nutrient input from the atmosphere (examples of such ecosystems are the raised and blanket bogs of north-western Europe, Arctic ecosystems with a very low rate of mineralisation, lichen and moss dominated heathlands, and plant communities dominated by lichens and mosses). Epiphytic lichen communities are probably most sensitive to excess nitrogen.

Current estimates based on 1990 deposition values indicates that 38 million hectares of nature areas in the EU15 countries, or 34% of the nature area considered, receive nitrogen depositions above their critical loads for eutrophication. The corresponding figures for the whole of Europe are 77 million hectares or 18% of the nature areas considered. It is expected that by 2010 the area receiving nitrogen depositions above the critical load for eutrophication will be reduced to 19% within the EU15 countries and 11% for the whole of Europe under currently agreed abatement measures.

Impacts on water use

In addition to the impact on the ecosystem, the effects of eutrophication cause problems for the use of surface waters. Public water supply is particularly vulnerable to eutrophication effects: problems in the water treatment system such as filter blockages in the water treatment system and undesirable tastes, odours and colour, both because of excessive algae. Other uses are less sensitive to eutrophication, though it may cause problems for hydroelectric, irrigation or fish hatchery purposes.

Eutrophication may also render the lake unsuitable for recreation due to the unpleasant appearance of water caused by high turbidity/low transparency, odours or algal masses. Furthermore the

presence of toxic blue-green algae may pose a health risk. During the summer of 1989 and in subsequent hot summers, major blooms of toxic blue-green algae were reported in many reservoirs in UK, Finland, Norway and Sweden.

4. PRODUCTS/OUTPUTS PRODUCED BY ETC/IW (1994-1997)

Published reports

The following table summarises the reports produced by ETC/IW which are publicly available.

Title	Status
Quality of surface freshwaters. Common procedure for the exchange of information. 1990-1992. Synthesis Report. August 1995. CEC (1995)	DGXI Report
Requirements for Water Monitoring	Topic Report 1/96
Surface Water Quality Monitoring	Topic Report 2/96
Surface Water Quantity Monitoring	Topic Report 3/96
Water Quality of Large Rivers	Topic Report 4/96
Annual Summary Report 1995	Topic Report 5/96
European Freshwater Monitoring Network Design	Topic Report 10/96
European Freshwater Monitoring Network (Summary)	Topic Report 11/96
Human Interventions in the Hydrological Cycle	Topic Report 13/96
Groundwater Monitoring in Europe	Topic Report 14/96
Water Resources Problems in Southern Europe	Topic Report 15/96
International Water Databases	Topic Report 16/96
Annual Summary Report 1996	Topic Report 1/97

Reports to be published in 1998

Title	Status
Lakes and Reservoirs in the EEA area	Final Draft Dec 1997
Monograph on the Impact of Excessive Nutrients on the Environment	Final Draft Dec 1997
Monograph on European Groundwater-Quality and Quantity	Final Draft Dec 1997
Sustainable Water Use in Europe: Part 1: Sectoral Use of Water	Final Draft Dec 1997
Joint EEA/WHO Monograph on Water Resources and Human Health	Annotated list of contents Dec 1997

5. PLANS AND PROJECTS FOR 1998

The most important products presented below are divided into first and second priority products.

First Priority Products	ETC Delivery date
« Europe's water resources » -Synthesis Report - **Objective:** To produce a succinct report describing the pressures on Europe's water resources and the resulting state and impacts. Topic Report summarising key findings from nutrient and groundwater monographs, and on the use of water	Final draft March 1998
EUROWATERNET implementation **Objective:** To establish and implement progressively EUROWATERNET across the EEA area and to develop EURO-WATERBASE. Position paper and recommendations for 1999-00 based on the outcome of the EIONET/NFP workshop held in October 1998	Final draft November 1998
Assistance to EEA for the production of the EEA 1998 SOE report **Objective:** To assess the current status and develop potential future trends under various socio-economical scenarios on key inland water issues.	Final draft July 1998

Second Priority Products	ETC Delivery date
Technical Report on progress of EUROWATERNET implementation	Final draft August 1998
Technical Report on the progress in the development of WATERBASE	Final draft August 1998
Technical Report on index to assure comparability of water quality data including the quantification of comparability	Final draft August 1998
Sustainable use and management of water in Europe: **section 2: Demand management and,** **section 3: Extreme hydrological events, human interventions and their importance to water resource management** **Objective:**. To investigate further the movement from facilitating infrastructure supply (FIS) to Demand Side Management (DSM) and how this relates to the sectoral use of water. To analyse the importance of extreme hydrological events and human interventions in relation to sustainable water resource management. To investigate the costs and feasibility of preparing a regular newsletter on Europe's Water Resources with particular focus on extreme hydrological events and demand management practices. Report on sustainable use and water management in Europe	Final draft November 1998 Final draft November 1998
Support to DGXI on the development of the technical annexes of the proposed Water Resources Framework Directive, the Reporting Directive, and on the possibility of improving reporting of other Directives **Objective:** To provide technical assistance and expertise to DGXI in the development of appropriate Technical Annexes of proposed Framework Directive. To assist the Commission in the harmonisation, data collection and subsequent interpretation/analysis of the reporting of information required in the Reporting Directive. To give support and guidance to DG XI on the improved harmonisation of reporting by Member States and reporting back by DG XI on other directives as requested and agreed with EEA.	Final draft - date to be agreed with DGXI D1
Common tools for emissions and waste integrated inventories **Objective:** To define a draft methodology for inventories of direct and indirect emissions to water. Technical Report describing a first model s part (of task SA2.5) and recommendations for a pilot PER/IEI to be performed in 1999 (air, water emissions)	Final draft December 1998

Table of ETC/IW Events and Activities for 1998

Event/activity	Event date	Response deadline	Expected output	Output date
Workshop: on implementation of EUROWATERNET	29-30/10/98	-	Position paper and recommendations for way forward, 1999-2000	12/98
Country Visits: for implementation of EUROWATERNET (selected countries) for emissions to water inventory (selected pilot countries)	2-7/98 9/98	- -	National state of Eurowaternet reports (one month after visit) Inputs to Methodology Report	3-8/98 12/98
Questionnaires: Information on water demand management and extreme hydrological events	3/98	5/98	Inputs to Sustainable Use of Water reports (Sections 2 and 3)	12/98
Data Update Requests: for implementation of EUROWATERNET	2-8/98	3-9/98	Inputs to Waterbase	12/98
EU98 Chapters	3/98	5/98	Two chapters for EU98	7/98
Draft Reports for EIONET Review:				
Europe's Water Resources	4/98	5/98	Synthesis Report	6/98
EUROWATERNET and Waterbase	12/98	2/99	Position Paper and Recommendations	2/99
Demand Management in Europe	11/98	3/99	Topic Report	6/99
Extreme Hydrological Events	11/98	3/99	Topic Report	6/99
Methodology for Emissions to Water Inventory	6/98	8/98	Position Paper and Recommendations	12/98